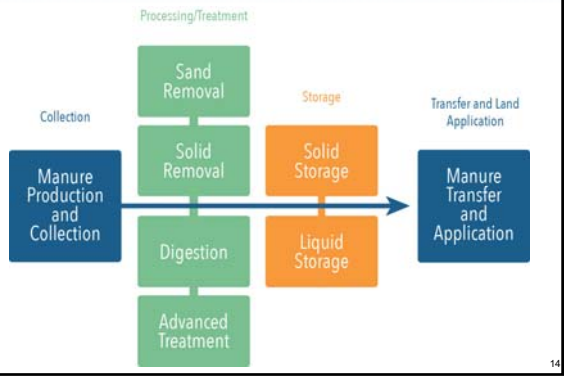
Manure Systems



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Operation

Can control many pieces on the system:

- Speed of travel
- Pressure
- Nozzle type
- End gun shut off
- Computerized systems which detect wind speed, etc.
- More specialized application

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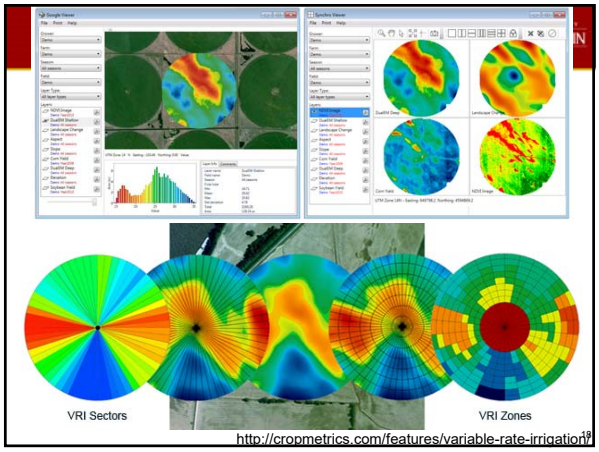
VRI Sectors
VRI Zones
http://cropmetrics.com/features/variable-rate-irrigation/
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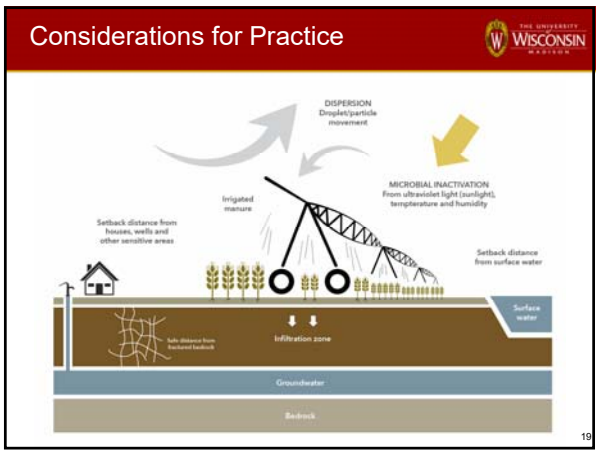
Considerations for Practice
DISPERSION
Droplet/particle movement
MICROBIAL INACTIVATION
From ultraviolet light (sunlight), temperature and humidity
Irrigated manure
Setback distance from houses, wells and other sensitive areas
Setback distance from surface water
Surface water
Infiltration zone
Groundwater
Bedrock
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Drift

- Aerial movement of liquid outside the intended application area
- Different than overspray
- Concerns for surface waters, residences, public areas, other crops, etc.
- No regulations for other manure application methods
- Drift from manure irrigation can be minimized by:
  - Maximizing droplet size
  - Minimizing release height (e.g. drop nozzles)
  - Minimizing wind speeds
  - Using barriers (e.g. tree lines)

Odor

- Odor perception is variable
- Manure odors can be from 300+ compounds
- Great citizen concern for odors produced
- Odor will be generally be greater for manure irrigation systems compared to other application methods
- Odor mitigation
  - Dispersion (winds greater than 5mph)
  - Edge of field barriers
  - Consideration of neighbors
  - Proximity to receptors
  - Manure processing
  - Large droplets

Water Quality

- Concerns for runoff and impact to groundwater
- May decrease runoff and leaching due reduced volume applied for each application period
- Need to apply to current regulations including NRCS CPS 590
- Issues with compliance/monitoring and enforcement

http://passel.unl.edu/pages/informationmodule.php?idinformationmodule=1088801071&topicorder=14&maxto=16

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Air Quality

- Issues of concern include
  - Particulate matter
  - Greenhouse gas emissions
  - Hazardous air pollutants (including ammonia and hydrogen sulfide)
- OSHA Occupational Standards and Wisconsin Ambient Air Standards
- Field concentrations of many hazardous air pollutants are below standards (more of a concern at the farmstead near the manure storage)
- Mitigation techniques
  - Edge of field barriers
  - Large droplets
  - Low release height

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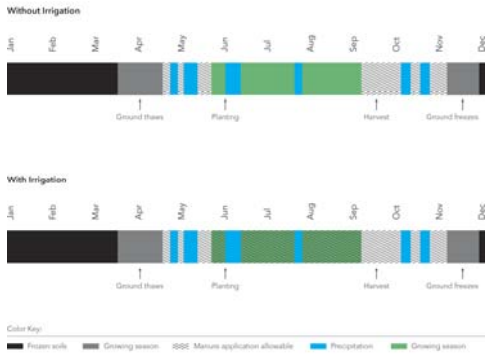
Application Timing



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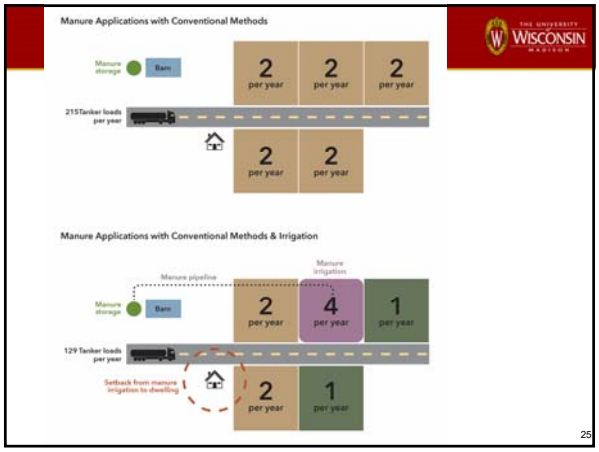

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